

## **REMARKS**

Claims 39-53 have been withdrawn from consideration. Claims 54-74 are currently pending, with claim 54 being the only independent claim. Claims 39-42, 45-51, 54-56, 58, 60-61, 64 and 68-74 have been amended. The amendments to claims 54-56, 58, 60-61, 64 and 68-74 clarify the wording of the claims, and are cosmetic in nature. Withdrawn claims 39-42 and 45-51 have been amended such that they remain consistent with elected claims 54-74. The specification has been amended. Support for the amendment to the specification may be found, for example, in Fig. 3 and at pg. 14, line 22 to pg. 15, line 15 of the specification as originally filed, in particular pg. 15, lines 8-15. No new matter has been added. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

### **Amendments to the Specification**

The specification has been amended to describe the components of the third ultrafiltration stage U3 and the additional difiltration stages D2 and D3 depicted in Fig. 3. The description of U3, D2 and D3 is supported by Fig. 3 and pg. 14, line 22 to pg. 15, line 15 of the specification as originally filed, in particular pg. 15, lines 8-15). No new matter has been added.

### **Claims rejections under 35 U.S.C. §103(a)**

Claims 54-74 stand rejected under 35 U.S.C §103(a) as unpatentable over Frank Lipnizki et al. "Concepts of Industrial-Scale Diafiltration Systems", Desalination 144, pg. 179-184 (2002) ("*Lipnizki*") in view of U.S. Patent No. 5,958,245 ("*Martin*"). For the following reasons, reconsideration and withdrawal of this rejection are requested.

The claimed invention relates to a device in which a first fluid stream, which consists of a wash fluid which is external to the product, and a second fluid stream which consists of a permeate that is derived from the product itself, are fed to a stream that consists of a product to be diafiltered which is being fed to membrane filtration means to be filtered.

Here, the wash fluid comprises water, the second fluid stream comprises a permeate that is derived from the product itself, such as permeate returned from the filtration means that are used or permeate produced by other filtration methods. In addition, the product to be diafiltered comprises a stream of fluid, such as concentrated fruit juice, which is being fed to membrane filtration means to be filtered.

In accordance with the claimed invention, the product stream is diluted by the first and second fluid streams before it enters the membrane filtration means. Here, the quantitative/volumetric ratio of the wash fluid supplied as the first fluid stream and the permeate supplied as the second fluid stream, which contains filterable constituents derived from the product itself, is adjusted or automatically controlled to a desired value.

As a result, the degree of washing, which is maximal when exclusively wash fluid that is external to the product is supplied and minimal when exclusively permeate that is derived from the product is supplied, can be advantageously adjusted or automatically controlled. Moreover, the quality and quantity of the concentrate and permeate streams that are produced can be adjusted or automatically controlled within broad limits, even under the steady-state operating conditions that are necessary for continuously operating multistage, large-scale production plants (see paragraph [0005] of U.S. Pub. No. 2007/0163628 (i.e., the published application)).

Independent claim 54 has been amended to recite “adjusting means for adjusting a volumetric ratio between the wash fluid stream and the permeate stream that are fed to the

product stream to control a viscosity of the permeate stream, such that a continuously multistage operation is enabled; wherein the permeate supply line comprises a permeate return line for returning permeate from the permeate outlet of the membrane filtration means to the product stream". The combination of *Lipnizki* and *Martin* fails to achieve the expressly-recited subject matter of now-amended independent claim 54.

The Examiner (at pg. 6 of the Office Action) has acknowledged that *Lipnizki* fails to teach or suggest "adjusting means for adjusting a volumetric ratio between the wash fluid stream and the permeate stream that are fed to the product stream to control a viscosity of the permeate stream, such that a continuously multistage operation is enabled" as recited in now-amended independent claim 54, and cites *Martin* to provide this feature.

Applicants disagree, however, that *Lipnizki* in combination with *Martin* achieves the expressly-recited subject matter of now-amended independent claim 54.

*Martin* relates to "a method and a device for extracting the halide ions from photographic fixing or bleaching/fixing solutions used in processing silver-halide photographic products" (see col. 1, lines 6-9). There is no adjusting means within *Martin* that adjusts a volumetric ratio between the wash fluid stream and the permeate stream as recited in now-amended independent claim 54. That is, there is no adjusting means for adjusting the volumetric ratio of the wash fluid stream and the permeate stream of the device in *Martin*, and there is also no teaching or suggestion of any effect that could be achieved by adjusting this ratio.

According to the Examiner, "Martin et al. teach that it is well-known and extremely obviously to incorporate an automatic control system such as a computer (col. 4, lines 45-55). Martin et al.'s computer calculates the amount of washing fluid so that should be added and controls the influx of the washing fluid (col. 4, lines 46-49)". Applicants disagree

*Martin* (col. 4, lines 45-55) describes a method of processing silver-halide photographic products. *Martin* (col. 4, lines 44-48) expressly explains that the method includes at least one washing step and that an “aqueous photographic solution used in the fixing or bleaching/fixing step is treated by means of the separation method according to the invention”. *Martin* fails to teach or suggest the expressly-recited subject matter of now-amended independent claim 54. The only embodiment disclosed in *Martin* in which a wash fluid stream and permeate stream can be simultaneously fed to the product to be filtered and thus, provide a ratio of the wash fluid stream to the permeate stream, is the embodiment disclosed in Fig. 1. In *Martin*, however, there is no teaching or suggestion in any description of Fig. 1 to control the water inlet (wash fluid stream) by a computer.

Moreover, even assuming *arguendo* that the water inlet of the *Martin* system could be controlled – which applicants dispute – controlling the inlet of the *Martin* system would not cause a change in the volumetric ratio of the wash fluid stream and the permeate stream. *Martin* teaches a system in which the permeate stream would increase or decrease to the same degree or extent as the wash fluid stream increases or decreases, and thus the ratio between the permeate stream and wash fluid stream cannot be “adjusted” in the system depicted in Fig. 1. That is, the ratio of the between the permeate stream and wash fluid stream is a fixed, constant.

*Martin* thus fails to teach or suggest “adjusting means for adjusting a volumetric ratio between the wash fluid stream and the permeate stream that are fed to the product stream to control a viscosity of the permeate stream, such that a continuously multistage operation is enabled; wherein the permeate supply line comprises a permeate return line for returning permeate from the permeate outlet of the membrane filtration means to the product stream”.

In view of the foregoing, independent claim 54 is patentable over the combination of *Lipnizki* and *Martin*. Reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a) are therefore in order, and a notice to that effect is respectfully requested.

In view of the patentability of independent claim 54, dependent claims 55-74 are also patentable over the prior art for the reasons set forth above, as well as for the additional recitations contained therein.

For example, independent claim 57 recites that “the product inlet and product outlet of the membrane filtration means are connected by a circulation pump to form a product circulation”. The combination of the cited art fails to teach or suggest this expressly recited subject matter.

*Lipnizki* fails to teach or suggest a circulation pump which connects the product inlet and the product outlet of the membrane filtration means such that a product circulation is formed. What *Lipnizki* does disclose are individual product feeding pumps for feeding product, which is branched off from the main product line to the individual filtration devices. In each case, the locations where the product is branched off from the main product line is upstream of the location at which the concentrated product leaving the filtration means is fed back into the main product line. Accordingly, there is no product circulation in the *Lipnizki* system. *Martin* for its part fails to teach or suggest anything whatsoever of the product inlet and product outlet of the membrane filtration means are connected by a circulation pump to form a product circulation as recited in dependent claim 57. Independent claim 57 is therefore patentable over *Lipnizki* and *Martin*, individually or in combination.

Based on the foregoing remarks, this application is in condition for allowance. Early passage of this case to issue is respectfully requested.

Should the Examiner have any comments, questions, suggestions, or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

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Respectfully submitted,  
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